

CHAPTER 8.X.

INFECTION WITH EPIZOOTIC
HEMORRHAGIC DISEASE VIRUS

Article 8.X.1.

General provisions

For the purposes of the *Terrestrial Code*, epizootic hemorrhagic disease (EHD) is defined as an infection of cervids and ~~bovids~~ cattle with one of several serotypes of epizootic hemorrhagic disease virus (EHDV) that is transmitted by *Culicoides* vectors. Outbreaks of disease due to EHDV are sporadic and geographically restricted. Although EHDV is not regarded as a significant pathogen of livestock in many countries in which it is present, outbreaks of disease have caused significant economic loss to the cattle industry in some countries.

The following defines an infection with the occurrence of EHDV infection:

- 1) EHDV has been isolated and identified as such from a sample from a cervid or bovid or a product derived from it; or
- 2) viral antigen or viral ribonucleic acid (RNA) specific to one or more of the serotypes of EHDV has been identified in samples from a cervid or bovid showing clinical signs consistent with EHD, or epidemiologically linked to a confirmed or suspected or confirmed case, or giving cause for suspicion of previous association or contact with EHDV; or
- 3) antibodies to structural or nonstructural proteins of EHDV that are not a consequence of vaccination have been identified in a cervid or bovid that either shows clinical signs consistent with EHD, or is epidemiologically linked to a confirmed or suspected or confirmed case, or gives cause for suspicion of previous association or contact with EHDV.

For the purposes of international trade, a distinction is made between a case as defined above and an animal that is potentially infectious to vectors.

For the purposes of the *Terrestrial Code*, the *infective period* for EHDV shall be 60 days.

For countries that do not meet the provisions of point 1 of Article 1.4.6. and in the absence of clinical disease in a country or zone, its EHDV status should be determined by an ongoing surveillance programme (in accordance with Article x.x.4612.). The programme may need to be adapted to target parts of the country or zone at a higher risk due to historical, geographical and climatic factors, ruminant population data and *Culicoides* ecology.

Standards for diagnostic tests and vaccines and vaccines are described in the *Terrestrial Manual*.

Article 8.X.2.

Safe commodities

When authorising import or transit of the following *commodities*, *Veterinary Authorities* should not require any EHDV related conditions regardless of the EHDV status of the ruminant population of the *exporting country or zone*:

- 1) *milk and milk products;*
- 2) *meat and meat products;*
- 3) *hides, skins, antlers and hooves;*

- 4) wool and fibre.

Article 8.X.3.

EHDV free Country or zone free from EHD

- 1) Historical freedom as described in Chapter 1.4. does not apply to with EHDV.
- 24) A country or a zone may be considered free from EHDV when infection with EHDV epizootic haemorrhagic disease is notifiable in the whole country, importation of animals and their semen, embryos, or oocytes is carried out in accordance with this chapter and either:
 - a) historical freedom has been demonstrated as described in Article 1.4.6.; or
 - ba) a surveillance programme in accordance with Article 8.X.4612. has demonstrated no evidence of EHDV transmission in the country or zone during the past two years; or
 - ebb) an ongoing surveillance programme in accordance with Article 8.X.12. and Chapter 4.3 has found demonstrated no evidence of Culicoides for at least two years in the country or zone.
- 32) An EHDV free country or zone free from EHD in which ongoing vector surveillance has found no evidence of Culicoides will not lose its free status through the importation introduction of seropositive or infective animals, or semen, embryos or ova oocytes from infected countries or infected zones infected with EHD.
- 43) An EHDV free country or zone free from EHD in which surveillance has found evidence that Culicoides are present will not lose its free status through the importation introduction of seropositive animals, or semen, embryos, or oocytes provided that: they were imported in accordance with Article X.X.6.
 - a) an ongoing surveillance programme has focused on EHDV transmission in domestic bovids and farmed cervids and has demonstrated no evidence of EHDV transmission in the country or zone; or
 - b) the animals, semen, embryos and oocytes were introduced in accordance with this chapter.

~~Article X.X.4.~~

~~EHDV seasonally free zone~~

~~An EHDV seasonally free zone is a part of an infected country or an infected zone for which for part of a year surveillance demonstrates no evidence either of EHDV transmission or of adult Culicoides.*~~

Article 8.X.3.bis

Zone seasonally free from EHD

A seasonally free zone is a part of an infected country or an infected zone in which for part of a year, surveillance demonstrates no evidence either of EHDV transmission or of adult Culicoides.

For the application of Articles 8.X.5.bis, 8.X.7. and 8.X.9., the seasonally free period is taken to commence the day following the last evidence of EHDV transmission (as demonstrated by the surveillance programme), and of the cessation of activity of adult Culicoides.

For the application of Articles 8.X.5.bis, 8.X.7. and 8.X.9., the seasonally free period is taken to conclude either:

- 1) at least 28 days before the earliest date that historical data show vector activity may recommence; or
- 2) immediately if current climatic data or data from a surveillance programme indicate an earlier resurgence of activity of adult Culicoides.

A seasonally free zone in which ongoing surveillance has found no evidence that *Culicoides* are present will not lose its free status through the introduction of vaccinated, seropositive or infective animals, or semen, embryos or oocytes from countries or zones infected with EHD.

Article 8.X.54.

~~EHDV infected~~ Country or zone infected with EHD

For the purpose of this chapter, an ~~EHDV infected~~ country or ~~infected~~ zone infected with EHD is a clearly defined area where evidence of EHDV transmission has been reported during the past two years. Such a country or zone may contain an ~~EHDV seasonally free zone~~, one that does not fulfil the requirements to qualify as either a country or zone free from EHD or a zone seasonally free from EHD.

Article 8.X.65.

Recommendations for importation from ~~EHDV free~~ countries or zones free from EHD

For ~~cattle-bovids~~ and cervids

~~Where EHDV is of concern,~~ Veterinary Authorities should require the presentation of an *international veterinary certificate* attesting that:

- 1) the animals showed no clinical sign of EHD on the day of shipment;
- 24) the animals were kept in an ~~EHDV free~~ country or zone free from EHD since birth or for at least 60 days prior to shipment; or
- 32) the animals were kept in an ~~EHDV free~~ country or zone free from EHD for at least 28 days, then were subjected, with negative results, to a serological test to detect antibody to the EHDV group and remained in the EHDV free country or zone until shipment; or
- 43) the animals were kept in an ~~EHDV free~~ country or zone free from EHD for at least ~~seven~~14 days, then were subjected, with negative results, to an agent identification test and remained in the ~~EHDV free~~ country or zone free from EHD until shipment; or
- 5) the animals:
 - a) were kept in a country or zone free from EHD for at least seven days;
 - b) were vaccinated at least 60 days before the introduction into the country or zone free from EHD against all serotypes demonstrated to be present in the source population through a surveillance programme as described in Article 8.X12.;
 - c) were identified as having been vaccinated; and
 - d) remained in the country or zone free from EHD until shipment;

AND

- 64) if the animals were exported from a free zone within an infected country either:
 - a) did not transit through an infected zone during transportation to the *place of shipment*; or
 - b) were protected from attacks by *Culicoides* at all times when transiting through an infected zone.

~~Article X.X.7.~~

~~Recommendations for importation from EHDV seasonally free zones~~

~~For cattle and cervids~~

~~Veterinary Authorities should require the presentation of an international veterinary certificate attesting that the animals:~~

- ~~1) were kept during the seasonally free period in an EHDV seasonally free zone since birth or for at least 60 days prior to shipment; or~~
- ~~2) were kept during the EHDV seasonally free period in an EHDV seasonally free zone for at least 28 days prior to shipment, and were subjected during the residence period in the zone to a serological test to detect antibody to the EHDV group with negative results, carried out at least 28 days after the commencement of the residence period; or~~
- ~~3) were kept during the EHDV seasonally free period in an EHDV seasonally free zone for at least 14 days prior to shipment, and were subjected during the residence period in the zone to an agent identification test with negative results, carried out at least 14 days after the commencement of the residence period;~~

~~AND~~

- ~~4) either:~~
 - ~~a) did not transit through an infected zone during transportation to the place of shipment; or~~
 - ~~b) were protected from attacks by *Culicoides* at all times when transiting through an infected zone.~~

Article 8.X.5.bis

Recommendations for importation from zones seasonally free from EHD

For bovids and cervids

Veterinary Authorities should require the presentation of an international veterinary certificate attesting that the animals:

- 1) showed no clinical sign of EHD on the day of shipment;
- 2) were kept during the seasonally free period in a zone seasonally free from EHD since birth or for at least 60 days prior to shipment; or
- 3) were kept during the seasonally free period in a zone seasonally free from EHD for at least 28 days prior to shipment, and were subjected during the residence period in the zone to a serological test to detect antibodies to the EHDV group with negative results, carried out at least 28 days after the commencement of the residence period; or

4) were kept during the seasonally free period in a zone seasonally free from EHD for at least 14 days prior to shipment, and were subjected during the residence period in the zone to an agent identification test with negative results, carried out at least 14 days after the commencement of the residence period; or

5) were kept during the seasonally free period in a zone seasonally free from EHD and were vaccinated, at least 60 days before the introduction into the free country or zone, against all serotypes the presence of which in the source population has been demonstrated through a surveillance programme in accordance with Article 8.X.12, and were identified as having been vaccinated and remained in the country or zone free from EHD until shipment.

AND

6) either:

a) did not transit through an infected zone during transportation to the place of shipment; or

b) were protected from attack from *Culicoides* at all times when transiting through an infected zone; or

c) were vaccinated in accordance with point 4 above.

Article 8.X.86.

Recommendations for importation from EHDV-infected countries or zones infected with EHD

For cattle bovids and cervids

Veterinary Authorities should require the presentation of an *international veterinary certificate* attesting that the animals:

1) showed no clinical sign of EHD on the day of shipment;

24) were protected from attacks by *Culicoides* in a vector-protected establishment for at least 60 days prior to shipment and during transportation to the place of shipment; or

32) were protected from attacks by *Culicoides* in a vector-protected establishment for at least 28 days prior to shipment and during transportation to the place of shipment, and were subjected during that period to a serological test to detect antibody ies to the EHDV group, with negative results, carried out at least 28 days after introduction into the vector-protected establishment; or

43) were protected from attacks by *Culicoides* in a vector-protected establishment for at least 14 days prior to shipment and during transportation to the place of shipment, and were subjected during that period to an agent identification test with negative results, carried out at least 14 days after introduction into the vector-protected establishment; or

54) were demonstrated to have antibodies for at least 60 days prior to dispatch against all serotypes whose presence has been demonstrated in the source population through a surveillance programme in accordance with Article 8.x.4612.

Article 8.X.97.

Recommendations for importation from EHDV-free countries or zones free or seasonally free from EHD

For semen of cattle bovids and cervids

Veterinary Authorities should require the presentation of an *international veterinary certificate* attesting that:

1) the donor animals males:

- a) showed no clinical sign of EHD on the day of collection;
 - ba) were kept in an EHDV free country or zone free from EHD or in a seasonally free zone during the seasonally free period for at least 60 days before commencement of, and during, collection of the semen; or
 - cb) were subjected to a serological test to detect antibody yes to the EHDV group, between 24-28 and 60 days after the last collection for this consignment, with negative results; or
 - de) were subjected to an agent identification test on blood samples collected at commencement and conclusion of, and at least every 7 days (virus isolation test) or at least every 28 days (PCR test) during, semen collection for this consignment, with negative results;
- 2) the semen was collected, processed and stored in conformity accordance with the provisions of Chapters 4.5. and 4.6.

~~Article X.X.10.~~

~~Recommendations for importation from EHDV seasonally free zones~~

~~For semen of cattle and cervids~~

~~Veterinary Authorities should require the presentation of an international veterinary certificate attesting that:~~

- 1) ~~the donor animals:~~
 - a) ~~were kept during the EHDV seasonally free period in a seasonally free zone for at least 60 days before commencement of, and during, collection of the semen; or~~
 - b) ~~were subjected to a serological test to detect antibody to the EHDV group, with negative results, at least every 60 days throughout the collection period and between 21 and 60 days after the final collection for this consignment; or~~
 - e) ~~were subjected to an agent identification test on blood samples collected at commencement and conclusion of, and at least every 7 days (virus isolation test) or at least every 28 days (PCR test) during, semen collection for this consignment, with negative results;~~
- 2) ~~the semen was collected, processed and stored in conformity with the provisions of Chapters 4.5. and 4.6.~~

~~Article 8.X.118.~~

Recommendations for importation from EHDV infected countries or zones infected with EHD

For semen of cattle bovids and cervids

Veterinary Authorities should require the presentation of an international veterinary certificate attesting that:

- 1) the donor animals males:
 - a) showed no clinical sign of EHD on the day of collection;
 - ba) were kept in a vector-protected establishment for at least 60 days before commencement of, and during, collection of the semen; or
 - cb) were subjected to a serological test to detect antibody yes to the EHDV group, with negative results, at least every 60 days throughout the collection period and between 24 28 and 60 days after the final collection for this consignment; or

- de) were subjected to an agent identification test on blood samples collected at commencement and conclusion of, and at least every 7 days (virus isolation test) or at least every 28 days (PCR test) during, semen collection for this consignment, with negative results;
- 2) the semen was collected, processed and stored in conformity accordance with the provisions of Chapters 4.5. and 4.6.

Article 8.X.129.

Recommendations for importation from EHDV-free countries or zones free or seasonally free from EHD

For embryos or oocytes of cattle bovids and cervids

Veterinary Authorities should require the presentation of an *international veterinary certificate* attesting that:

- 1) the donor females:
 - a) showed no clinical sign of EHD on the day of collection;
 - ba) were kept in an EHDV-free country or zone free from EHD or in a seasonally free zone during the seasonally free period for at least the 60 days prior to, and at the time of, collection of the embryos or oocytes; or
 - cb) were subjected to a serological test to detect antibodyies to the EHDV group, between 24 28 and 60 days after collection, with negative results; or
 - de) were subjected to an agent identification test on a blood sample taken on the day of collection, with negative results;
- 2) the embryos or oocytes were collected, processed and stored in conformity accordance with the provisions of Chapters 4.7., 4.8. and 4.9., as relevant.

~~Article X.X.13.~~

~~**Recommendations for importation from EHDV seasonally free zones**~~

~~For embryos or oocytes of cattle and cervids~~

~~*Veterinary Authorities* should require the presentation of an *international veterinary certificate* attesting that:~~

- ~~4) the donor females:

 - ~~a) were kept during the seasonally free period in a seasonally free zone for at least 60 days before commencement of, and during, collection of the embryos or oocytes; or~~
 - ~~b) were subjected to a serological test to detect antibody to the EHDV group, between 21 and 60 days after collection, with negative results; or~~
 - ~~e) were subjected to an agent identification test on a blood sample taken on the day of collection, with negative results;~~~~
- ~~2) the embryos or oocytes were collected, processed and stored in conformity with the provisions of Chapters 4.7., 4.8. and 4.9., as relevant.~~

Article 8.X.1410.

Recommendations for importation from ~~EHDV-infected~~ countries or zones ~~infected with EHD~~

For embryos or oocytes of ~~cattle~~ ~~bovids~~ and cervids

Veterinary Authorities should require the presentation of an *international veterinary certificate* attesting that:

- 1) the donor females:
 - a) ~~showed no clinical sign of EHD on the day of collection;~~
 - ba) were kept in a *vector-protected establishment* for at least 60 days before commencement of, and during, collection of the embryos or oocytes; or
 - cb) were subjected to a serological test to detect antibody~~ies~~ to the EHDV group, between ~~24 28~~ and 60 days after collection, with negative results; or
 - de) were subjected to an agent identification test on a blood sample taken on the day of collection, with negative results;
- 2) the embryos or oocytes were collected, processed and stored in ~~conformity~~ ~~accordance~~ with ~~the provisions of~~ Chapters 4.7., 4.8. and 4.9., as relevant.

Article 8.X.15~~11~~.

Protecting animals from Culicoides attacks

1. Vector-protected establishment or facility

~~Where movement of animals or collection of genetic material requires a vector-protected facility, the establishment or facility should be approved by the Veterinary Authority and the means of protection should at least comprise the~~ following ~~criteria apply:~~

- a) appropriate physical barriers at entry and exit points, for example, double-door entry-exit system;
- b) openings of the building are *vector* screened with mesh of appropriate gauge impregnated regularly with an approved insecticide according to ~~the~~ manufacturers' instructions;
- c) *vector* surveillance and control within and around the building;
- d) measures to limit or eliminate breeding sites for *vectors* in the vicinity of the *establishment* or facility;
- e) standard operating procedures, including description of back-up and alarm systems, for operation of the *establishment* or facility and transport of animals to the place of *loading*.

2. During transportation

When transporting animals through ~~EHDV-infected~~ countries or ~~infected~~ zones ~~infected with EHD~~, Veterinary Authorities should require strategies to protect animals from attacks by *Culicoides* during transport, ~~taking into account the local ecology of the vector.~~

a) Transport by road

Risk management strategies may include:

- i) ~~treating animals with insect repellents prior to and during transportation;~~
- aii) *loading*, transporting and *unloading* animals at times of low *vector* activity (i.e. bright sunshine, low temperature);
- biii) ensuring *vehicles* do not stop en route during ~~times of high vector activity (i.e. dawn or dusk, or overnight).~~ ~~dawn or dusk, or overnight, unless the animals are held behind insect proof netting;~~
- iv) ~~darkening the interior of the vehicle, for example by covering the roof or sides of vehicles with shade cloth.~~

v) surveillance for vectors at common stopping and unloading points to gain information on seasonal variations;

vi) using historical information or information from appropriately verified and validated EHD epidemiological models to identify low risk ports and transport routes.

b) Transport by air

Prior to loading the animals, the crates, containers or jet stalls should be sprayed with an insecticide approved in the country of dispatch.

Crates, containers or jet stalls in which animals are being transported and the cargo hold of the aircraft should be sprayed with an approved insecticide when the doors have been closed and prior to take-off. All possible insect harbourage should be treated. The spray containers should be retained for inspection on arrival.

In addition, during any stopover in countries or zones not free from EHD, prior to the opening of any aircraft door and until all doors are closed, netting of appropriate gauge impregnated with an approved insecticide should be placed over crates, containers or jet stalls.

Article 8.X.1612.

Surveillance

This article is complementary to Chapters 1.4. and for vectors, complementary to Chapter 1.5. and outlines the principles for surveillance for EHDV applicable to Member Countries seeking to determine the EHDV status of a country or a zone.

EHD is a vector-borne infection transmitted by different species of *Culicoides* in a range of ecosystems.

An important component of the epidemiology of EHD is the capacity of its vector, which provides a measure of disease risk that incorporates vector competence, abundance, seasonal incidence, biting rates, survival rates and extrinsic incubation period. However, methods and tools for measuring some of these vector factors remain to be developed, particularly in a field context. Therefore, surveillance for EHD should focus on transmission of EHDV in domestic bovids and farmed cervids.

The purpose of surveillance is the detection of transmission of EHDV in a country or zone and not determination of the status of an individual animal or herd.

The impact and epidemiology of EHD differ widely in different regions of the world and therefore it is impossible not appropriate to provide specific recommendations for all situations. It is incumbent upon Member Countries should to provide scientific data that explain the epidemiology of EHD infection in the region country or zone concerned and adapt the surveillance strategies for defining their infection status (free, seasonally free or infected country or zone) to the local conditions. There is considerable latitude available to Member Countries to justify their infection status at an acceptable level of confidence.

Surveillance for EHD should be in the form of a continuing programme.

General provisions on surveillance for arthropod vectors are in Chapter 1.5.

More specific approaches to surveillance for Culicoides-transmitted Orbivirus infections are described in Chapters 8.3. and 12.1. Passive surveillance for clinical cases of EHD in susceptible wild ruminants cervids can be a useful tool for detecting disease, based on lesions of haemorrhagic disease combined with appropriate diagnostic tests detection techniques.